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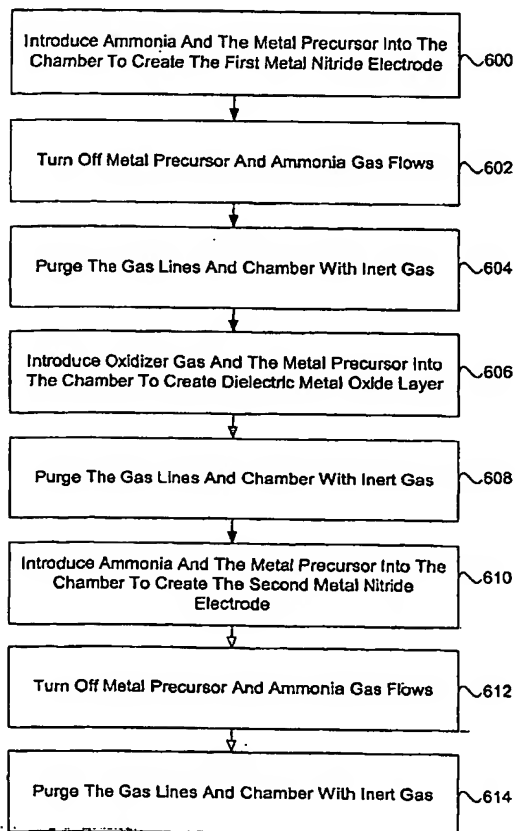
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(54) Title: IN-SITU FORMATION OF METAL INSULATOR METAL CAPACITORS CROSS REFERENCE TO RELATED APPLICATIONS



(57) Abstract: The invention describes an in-situ method of fabricating a metal insulator metal (MIM) capacitor and products formed by the same. The method utilizes atomic layer deposition (ALD) or metal-organic chemical vapor deposition (MOCVD). In the method, a metal precursor is sequentially reacted with a nitrogen source, oxidant, and then a nitrogen source again. Reaction with the nitrogen source generates the outermost conductive metal nitride (MN) layers (121). Reaction with the oxidant generates an inner dielectric metal oxide (MO<sub>x</sub>) layer (110). Alternatively, or in addition, the metal precursor can be reacted with a mixture of oxidant and nitrogen source to generate inner dielectric layer(s) (231, 232, 310) of metal oxynitride (MO<sub>x</sub>N<sub>y</sub>). Because the same metal is used throughout the capacitor, the layers in the MIM capacitor exhibits excellent compatibility and stability.

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